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DAVID A JACKSON
KLAUBER & JACKSON
411 HACKENSACK AVENUE
HACKENSACK, NJ 07601

EXAMINER

WILSON, MICHAEL C

ART UNIT PAPER NUMBER

1632

DATE MAILED: 03/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

08/485,943

Applicant(s)

FRIEDMAN ET AL.

Examiner

Michael C. Wilson

Art Unit

1632

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 124,132-137,139-143,145-153,155-160 and 163-173 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 124,132-137,139-143,145-153,155-160 and 163-173 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: Notice to Comply w Seq. Rules.

DETAILED ACTION

Upon reconsideration, prosecution on the merits has been reopened to make new rejections.

Claims 1-123, 125-131, 138, 144, 154, 161 and 162 have been canceled. Claims 124, 132-137, 139-143, 145-153, 155-160, 163-173 are pending and under consideration in the instant office action.

Specification

This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 CFR 1.821 through 1.825. **The sequences on pg 158, line 5 (two) do not have SEQ ID NO. The amino acid sequence in claims 167 and 168 (gly-ser-pro) does not have a SEQ ID NO.** Applicants must file a "Sequence Listing" accompanied by directions to enter the listing into the specification as an amendment. Applicant also must provide statements regarding sameness and new matter with regards to the CRF and the "Sequence Listing." Failure to fully comply with the sequence rules in response to the instant office action will be considered non-responsive.

The status of the applications on pg 1, lines 8-11 (three) and pg 12, line 2 (two), will have to be updated upon being allowed or abandoned.

Claim Rejections - 35 USC § 112

Enablement

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The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 124, 132-137, 139-143, 145-149, 155-160 and 163-173 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Breadth of the claims

The claims are drawn towards a method of modifying the weight of a mammal using a vector encoding an ob protein under conditions that provide for expression of the ob protein in vivo. The ob proteins in the claims include SEQ ID NO:2 (mouse ob), SEQ ID NO:4 (human ob) and variations thereof (see claims for details regarding the variations). The preamble of the claim 124 requires "modifying the body weight of a mammal". The body of the claim requires administering the vector to a mammal "under conditions that provide for expression of ob polypeptide in vivo, such ob polypeptide capable of modulating body weight". The body of the claim does not specifically require the ob protein is expressed in the mammal or that the weight of the mammal is modified. Nor does the claim require the body weight of the mammal is decreased. However, the preamble bears weight under enablement because each and every limitation must have at least one enabled use. In this case, the only purpose for administering a vector to a mammal "under conditions that provide for expression of OB polypeptide in vivo" is for decreasing body weight (pg 83, lines 3-7). Therefore,

administration of a vector encoding ob must decrease body weight to have an enabled use according to the specification.

State of the art regarding the ob gene/protein

The obese (ob) gene product is equivalent to the leptin gene product (Tartaglia, 1995, Cell, Vol. 83, pages 1263-1271; see abstract, line 1; see the instant application on pg 5, lines 5-16).

Ob/ob mice with a homozygous disruption in the ob gene were known to be obese (pg 3, lines 3-6).

At the time of filing, it was unknown whether obese ob/ob mice correlated to obese humans with a gene mutation. Since the time of filing, Clayton (Arch. Dis. Child, 1998, Vol. 78, 278-284) taught that 5% of humans with obesity have an ob concentration lower than expected (pg 282, col. 1, line 20).

The specification states: "Because of the myriad factors that seem to impact body weight, it has not been possible to predict which factors and, more particularly, which homeostatic mechanisms is actually primarily determinative. Nonetheless, the apparent connections between the ob gene and the extent and characteristics of obesity have prompted the further investigation and elucidation that is reflected by the present application. It is the identification of the sequence of the gene and corresponding peptide materials, to which the present invention following below directs itself." (pg 4, lines 14-20).

Thus, it was unpredictable whether ob/ob mice correlated to any obese human or to a gene disruption that occurred in humans.

At the time of filing, the art did not teach what tissue expressed the ob protein. Nor did the art teach in what tissues the ob protein mediated an effect. Since the time of filing, Tartaglia (cited above, Dec. 29, 1995, Cell, Vol. 83, pages 1263-1271) confirmed that up to 1995, the tissue in which the ob protein mediated an effect remained unknown (pg 1263, col. 2, line 2).

Thus, the tissue target required to express ob or to mediate a decrease in body weight in a mammal was unknown at the time of filing.

Since the time of filing, Fletcher (Nov. 15, 1995, Blood, Vol. 86, page 241a) taught decreasing the body weight of an obese mouse having a homozygous mutation in the ob gene by administering bone marrow from an autologous mouse transduced with a retroviral vector encoding ob to the bone marrow of the recipient mouse (page 241a, line 12).

Morsy (1998, Proc. Natl. Acad. Sci., USA, Vol. 95, pages 7866-7871) taught that 60% weight loss can be obtained for 6-7 weeks following administration of a leptin-encoded adenoviral vector (pg 7870, col. 1, line 13); however, analysis revealed eventual loss of the vector DNA 4 and 8 weeks following administration of the vector (pg 7870, col. 2, line 5).

Unpredictability of gene therapy

At the time of filing and since, the combination of vector, promoter, dosage, target tissue, level of expression and route of administration required to target the desired tissue so that a therapeutic would occur was unpredictable.

Feldman (Fundamental & Clinical Pharmacology, 1995, Vol. 9, pg 8-16) suggested treating restenosis using a vector encoding a protein. Feldman discussed experiments in which the vector administered to the arterial wall during angioplasty allowed low levels of protein expression in cells of the arterial wall. Feldman taught that obtaining a therapeutic effect was prevented by low numbers of cells expressing a transgene, transfection efficiency, target specificity, and sustained expression (pg 12, "Arterial gene therapy"). None of the experiments described by Feldman resulted in a therapeutic effect.

Miller (Feb. 1995, FASEB J., Vol. 9, pg 190-199) reviewed the types of vectors available for *in vivo* gene therapy, and concluded that "for the long-term success as well as the widespread applicability of human gene therapy, there will have to be advances...targeting strategies outlined in this review, which are currently only at the experimental level, will have to be translated into components of safe and highly efficient delivery systems" (pg 198, col. 1). Miller did not obtain a therapeutic effect using gene delivery.

Crystal (Oct. 20, 1995, Science, Vol. 270, pg 404-410) also reviewed various vectors known in the art and indicates that "among the design hurdles for all vectors are the need to increase the efficiency of gene transfer, to increase target specificity and to enable the transferred gene to be regulated" (pg 409). Crystal did not obtain a therapeutic effect using gene delivery.

Verma (Sept. 1997, Nature, Vol. 389, pg 239-242) reviewed vectors for use in gene therapy and discussed problems associated with adenoviral vectors and indicates

a resolution to vector targeting has not been achieved in the art (see entire article).

Verma also taught appropriate regulatory elements may improve expression, but it is unpredictable what regulatory elements target what tissues (pg 240, sentence bridging col. 2-3). Verma did not obtain a therapeutic effect using gene delivery.

Deonarain (1998, Expert Opin. Ther. Pat., Vol. 8, pg 53-69) indicated that one of the biggest problems hampering successful gene therapy is the "ability to target a gene to a significant population of cells and express it at adequate levels for a long enough period of time" (page 53, first paragraph). Deonarain reviewed new techniques under experimentation in the art that show promise but stated that such techniques were even less efficient than viral gene delivery that failed to work (see pg 65, 1st ¶ under "Conclusion"). Deonarain did not obtain a therapeutic effect using gene delivery.

Ross (Sept. 1996, Human Gene Therapy, Vol. 7, pg 1781-1790) stated a major technical impediment to gene transfer is the lack of ideal gene delivery systems including vectors, promoters and modes of delivery (pg 1782, col. 2, 1st full ¶). The ability to use gene therapy to obtain a therapeutic effect in a patient was unpredictable (Ross, pg 1789, col. 1, 1st ¶). Ross did not obtain a therapeutic effect using gene delivery.

Therefore, it was unpredictable what combination of vector, promoter, dosage, cells, level of expression and route of administration would provide a therapeutic effect using gene delivery.

Teachings of the specification

Pg 5, line 10 teaches the "leptin" protein is absent in plasma of ob/ob mice. The specification does not teach the leptin protein is absent in obese humans.

The specification on pg 73-83 describes protein based therapy for obesity. On pg 74, lines 18-27, applicants describe administering the ob protein by intravenous, intraarterial, intraperitoneal, intramuscular or subcutaneous routes of administration. Pg 83, line 3, through pg 84, line 24, describes administering the ob gene using a vector to decrease body weight of a mammal. The description of nucleic acid-based therapies on pg 83 does not include a description of the conditions required to obtain expression of the protein or the route of administration. The disclosure on pg 74 is limited to protein administration and does not include vector administration. One of skill in the art would not read the description of routes of administration for proteins on pg 74 as applying to the nucleic acid-based therapy on pg 83 because they are under different headings (see headings for "Polypeptide-based therapeutic treatment" and "Nucleic acid-based therapeutic treatments" on pg 73 and 83, respectively). The specification does not teach any specific dosages or routes of delivery for the vectors listed for use in *in vivo* gene delivery.

Pg 83, line 4, teaches the ob gene can be "introduced into human fat cells to develop gene therapy for obesity." The specification does not teach how to target vectors to adipocytes using *in vivo* gene delivery. The specification does not teach what cells mediate the function of the ob protein so that one of skill could target a vector encoding ob to those cells.

Pg 83, lines 3-26, lists viral vectors for delivering the ob gene. For example, defective viral vectors allow "for administration to cells in a specific, localized area, without concern that the vector can infect other cells. Thus, adipose tissue can be specifically targeted." Such vectors include HSV, papillomavirus, EBV adenovirus, AAV and retrovirus. Pg 84, lines 1-17, describes introducing a vector by lipofection. Pg 84, lines 18-24 describe administering the vector as naked DNA plasmid. The specification does not teach the specific combination of vector, promoter, route of administration and dosage required to obtain ob expression in a mammal such that a decrease in body weight is obtained.

Pg 90 begins the examples section, which include gene mapping of the mouse and human ob gene, cloning of the mouse and human ob gene, preparing the ob protein, preparing antibodies to the ob protein and recombinant expression of the ob protein in bacteria.

Pg 118, line 23, pg 12, line 10, through pg 125, line 2, and pg 125, Table 1, teach administering the ob protein to three strains of ob/ob mice. The ob/ob mice lost weight.

Pg 129, Example 9, and pg 126, Example 10, describe increased expression of ob in adipocytes as compared to other tissues. Since the time of filing, it has been confirmed that ob was expressed exclusively in adipose tissue (Clayton, cited above, pg 282, col. 1, line 3).

Pg 144, line 22, and pg 120, lines 1-25, describe the ob serum levels in mice and humans.

Pg 147, Example 11, teaches the human ob protein is active in ob/ob mice.

The specification teaches delivering ob protein to treat obesity on pg 73-74 but does not provide adequate guidance for one of skill to obtain the same serum level ob using gene delivery.

Overall, the specification does not overcome the unpredictability in the art by teaching the specific combination of vector, promoter, dosage and route of administration required to target ob expression to fat cells or how to express ob protein so it will target the tissue that mediates a reduction in body weight.

Since the time of filing, Fletcher (cited above) decreased the body weight of an obese mouse having a homozygous mutation in the ob gene by administering bone marrow from an autologous mouse transduced with a retroviral vector encoding ob to the bone marrow of the recipient mouse (page 241a, line 12). In view of the unpredictability in the art of gene therapy, the specific combination of retrovirus, transduced bone marrow cells and bone marrow administration is essential to the invention. Applicants do not enable the claimed invention because applicants do not describe the specific combination of retrovirus, transduced bone marrow cells and bone marrow administration, which is essential to reduce body weight as taught by Fletcher.

Morsy (cited above) obtained weight loss by administering $1-2 \times 10^{11}$ particles of helper adenoviral vector encoding leptin via the tail vein of ob/ob mice (pg 7869, col. 2; pg 7870, Fig. 4B, Fig. 5B, col. 1). In view of the unpredictability in the art of gene therapy, the specific combination of adenovirus, tail vein injection and the dosage of $1-2 \times 10^{11}$ particles is essential to the invention. Given the state of the art regarding the ob gene/protein taken with the teachings in the specification, one of skill would not have

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expected intravenous administration to cause ob expression in adipocytes as contemplated by applicants as being the source of ob expression. Nor would one of skill have known that intravenous administration would cause ob expression capable of targeting cells that mediate a therapeutic effect. Applicants do not enable the claimed invention because the specification does not describe the specific combination of adenovirus, tail vein injection and the dosage of $1-2 \times 10^{11}$ particles, which is essential to reduce body weight as taught by Morsy.

Muzzin of record (PNAS, Dec. 1996, Vol. 93, pg 14804-14808) obtained weight loss of ob/ob mice by administering 3×10^9 particle forming units of helper adenoviral vector encoding leptin via the tail vein (pg 14805, ¶¶ bridging col. 1-2 and col. 2, 1st full ¶). In view of the unpredictability in the art of gene therapy, the specific combination of adenovirus, tail vein injection and the dosage of 3×10^9 pfu is essential to the invention. One of skill would not have expected that intravenous administration would cause expression in adipocytes as contemplated by applicants as the source of the majority of ob expression. Nor would one of skill have expected that intravenous administration would cause ob expression capable of targeting cells capable of mediating a decrease in body weight. Applicants do not enable the claimed invention because the specification does not describe the specific combination of adenovirus, tail vein injection and the dosage of 3×10^9 pfu, which is essential to reduce body weight as taught by Muzzin.

In view of the art recognized unpredictability in gene therapy and the mere list of possible vectors provided by applicants on pg 83 and 84 without teaching the route of

administration or dosage, those of skill in the art would be left to perform an undue amount of experimentation to determine the specific combination of vector, promoter, route of administration and dosage required to reduce body weight in a mammal.

In addition, the claims encompass administering a vector encoding ob and obtaining any body weight modulation. However, the specification is clearly limited to administering a vector encoding ob to decrease body weight (pg 83, line 5). Therefore, the claims should be limited to decreasing body weight.

Furthermore, the claims encompass decreasing the body weight of any mammal using a vector encoding an ob protein. However, the specification and the art since the time of filing are limited to treating mammals with an ob deficiency with the ob protein. The specification does not correlate the obese mammals having a defective ob gene to any other obese mammals or any other obesity related gene defect. The specification does not provide an enabled use for decreasing the body weight of a wild-type mammal (having a normal weight). Therefore, it would require one of skill undue experimentation to determine how to use the vector encoding ob to treat obesity in any mammal as broadly claimed other than those with a defective ob gene.

Certain claims encompass using any analog of an ob protein that modulates body weight. The specification defines analogs as ob proteins that agonize or antagonize the function of the ob protein. In other words, the claims encompass administering a vector encoding a protein that antagonizes the function of the ob protein and causes a weight increase. The specification does not teach any ob proteins that antagonize the function of ob. The specification does not teach how to use the ob

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protein analogs to increase weight. Without such guidance it would require one of skill in the art undue experimentation to determine antagonistic analogs of the ob protein or how to use vectors encoding ob proteins capable of increasing body weight.

Finally, the specification does not enable using a vector encoding an ob protein having any substitution as broadly encompassed by 134, 135, 142, 143, 148, 149, 158, 159 and 165-173. Salvador (Exp. Opin. Pharmacotherapy, 2001, Vol. 2, No. 10, pg 1615-1622) taught leptin is 167 amino acids in length and has the body weight control functions confined to amino acids residues 106-140. The specification teaches the conservative and non-conservative substitutions between the mouse and human leptin proteins in Fig. 4. The specification does not define what they consider "conservative" and "non-conservative" substitutions. The specification does not teach the functional region of the leptin protein or that any substitution as broadly claimed will allow the leptin protein produced to control body weight. Without such guidance it would have required one of skill undue experimentation to determine which amino acids could be substituted without altering the active site of leptin or to determine which amino acids could be substituted without altering the structure of the active site or the function of leptin.

New Matter

Claims 124, 132-137, 139-143, 145-149, 155-160 and 163-173 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that

the inventor(s), at the time the application was filed, had possession of the claimed invention.

The phrase "conditions that provide for expression of the OB polypeptide *in vivo*" in claims 124, 132-135, 163-165 and 167 is new matter. Support cannot be found on pg 83-84, which merely lists possible vectors for gene delivery. The specification does not describe any dosage or route of administration for the vectors, which is encompassed by "conditions that provide for expression of the OB polypeptide *in vivo*." While it is readily apparent that the specification contemplates gene delivery, it is not readily apparent that applicants contemplated the conditions that would cause ob expression *in vivo* using gene delivery. The breadth of expressing the ob protein anywhere *in vivo* as broadly encompassed by the phrase is certainly not readily apparent from pg 83, line 4, which is limited to introducing the ob gene into human fat cells.

Similar phrases are found in claims 139-143, 155-159, 166 and 168-173, which are rejected for the reasons in the paragraph above.

The concept of amino acids 22-167 of SEQ ID NO:2 or 4 in claim 124 is found in Fig. 3, and described on pg 12, lines 16-19, as being the mature form of the mouse ob protein.

The concept of amino acids 22-166 of SEQ ID NO:5 or 6 in claim 132 is found in Fig. 5, described on pg 13, lines 3-7, as being the mature form of the human ob protein.

The phrase "operatively associated with an expression control sequence" in claims 139-143, 145-149 and 155-157 is new matter. Support has not been provided and none can be found. The section that describes *in vivo* gene delivery does not

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contemplate using the expression control sequences describe on pg 52, line 7, through pg 53, line 15. In context, the expression control sequences described on pg 52, line 7, through pg 53, line 15, are limited to in vitro expression of ob because they are part of the description of unicellular hosts for producing the protein *in vitro* (see pg 52, line 2; "yeast" on line 19; pg 53, lines 9-15; pg 54, lines 7-9). The section from pg 50, line 18, through pg 54, line 9, is headed "Production of OB polypeptide expression and synthesis" and discusses numerous culture methods, including bacterial, eukaryotic cell culture and yeast for expressing the ob protein, but does not discuss expressing the protein *in vivo*.

The concept of "83 percent or more amino acid identity to the OB polypeptide amino acid sequence set out in SEQ ID NOs: 2, 4, 5, 6, 23 or 25" in claim 133, 147 is new matter. Support was not provided for the limitation in the response filed on 3-27-98, on pg 9, and none can be found.

The concept of an OB protein comprising "amino acids 22-167 of SEQ ID NO:4 wherein one or more amino acids selected from the group consisting of amino acids 53... ..166 is substituted with another amino acid" in claims 134, 142, 148, 158 is new matter. Fig. 4 describes specific conservative substitutions of the amino acids of the mouse and human ob polypeptide using asterisks at amino acids 53, 92, 98, 118, 121, 122, 126-128, 132, 139, 159 and 166 and specific non-conservative substitutions using a dash at amino acids 71, 85, 89, 110, 129, 157 and 163. The specification does not suggest substituting the amino acids listed with any amino acid as broadly claimed.

The concept of an OB protein comprising "amino acids 22-167 of SEQ ID NO:4 wherein one or more amino acids selected from the group consisting of amino acids... ...56... [and] ...95... is substituted with another amino acid" in claims 134, 142, 148, 158 is new matter. Amino acids 56 and 95 are not marked as being substituted in Fig. 4.

The concept of an OB protein comprising "amino acids 22-166 of SEQ ID NO:6 wherein one or more amino acids selected from the group consisting of amino acids 52, 55, 70, 84, 88, 91, 94, 97, 109, 117, 120, 121, 125, , 126, 127, 128, 131, 138, 156, 158, 162 and 165 is substituted with another amino acid" in claim 135, 143, 149, 159 is new matter. The specification does not suggest substituting the amino acids listed with any amino acid as broadly claimed. The numbers for substitutions as claimed do not correspond with the description in Fig. 4. In fact, the human protein is described in Fig. 4 as having 167 amino acids while the human protein is described in Fig. 5 as having 166 amino acids.

The concept of administering viral vectors by infection or liposome mediated transfection in claim 151 is new matter. Pg 83, lines 4-26, contemplates viral vectors but does not teach administering viral vectors to a mammal by infection. Pg 84, lines 1-17, contemplates delivering the ob gene by lipofection but does not teach lipofection is used to administer viral vectors. It is not readily apparent that the section discussing lipofection encompasses viral vectors in the preceding paragraphs because lipofection is used for nucleic acids (pg 84, line 2) and not for viral particles. Nowhere does the

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section on nucleic acid-based therapeutic treatments (pg 83, line 4, through pg 84, line 24) contemplate administering the viral vectors by infection or by lipofection.

The concept of using the early or late SV40, CMV, vaccinia, polyoma, adenovirus, 3-phosphoglycerate kinase or other glycolytic enzyme promoters for gene delivery in a mammal as in claim 160 does not have support in the specification as originally filed. Support has not been provided and none can be found. In particular, it is not readily apparent that the expression control sequences for expressing ob in bacteria in vitro contemplated in the paragraph bridging pg 52-53 are for gene delivery in vivo because pg 52, line 7, through pg 53, line 15, in context is limited to in vitro expression of ob (see pg 53, line 15, "human and plant cells in tissue culture"). Nowhere does pg 52, line 7, through pg 53, line 15, contemplate using the regulatory elements in vector for gene delivery in vivo as claimed.

Claims 165-173 are new matter. Applicants stated in the response filed 10-8-99 that the claims have support "generally throughout Applicants' specification" (pg 17). Applicants' argument is not persuasive. The specific substitutions in claim 165, 166, 170, 171 and 173 cannot be found. The N-terminal amino acids in claims 167 and 168 cannot be found. The "truncated analogs" with the substitutions listed in claims 169, 172 cannot be found.

Indefiniteness

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 124, 132-137, 139-143, 145-149, 155-160 and 163-173 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 124, 132-137 and 165-173 are indefinite because the preamble of the claim is directed toward modifying the body weight of a mammal but the body of the claim does not recite a clear positive step in which the body weight of the mammal is modified. It is unclear if the claims are limited to a method that results in modifying the body weight of the mammal or if the claims encompass merely administering DNA encoding an ob protein capable of modulating body weight without modulating body weight.

Claims 139-142 are indefinite because the preamble of the claim is directed toward delivering DNA encoding an OB polypeptide capable of modulating body weight to a mammal but the body of the claim does not recite a clear positive step of delivering. Nor do the claims recite a clear positive step in which the body weight of the mammal is modified. It is unclear if the claims are limited to a method that results in modifying the body weight of the mammal or if the claims encompass merely administering DNA encoding an ob protein capable of modulating body weight without modulating body weight.

Claims 144-149 and 155-159 are indefinite because the preamble of the claim is directed toward expressing an OB polypeptide in a mammal but the body of the claim does not recite a clear positive step of expressing an OB polypeptide. The body of the

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claim requires administering a vector comprising DNA encoding an OB polypeptide capable of modulating body weight to a mammal but does not recite a clear positive step in which the body weight of the mammal is modified. It is unclear if the claims are limited to a method that results in modifying the body weight of the mammal, if the claims encompass merely expressing the ob protein capable of modulating body weight without modulating body weight or if the claims encompass merely administering the vector to the mammal.

The phrase "such OB encoding DNA" in claim 140 lacks antecedent basis.

Conclusion

No claim is allowed.

Inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Wilson who can normally be reached at the office on Monday, Tuesday, Thursday and Friday from 9:30 am to 6:00 pm at 571-272-0738.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

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For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Ram Shukla, can be reached on 571-272-0735.

The official fax number for this Group is (571) 273-8300.

Michael C. Wilson

A handwritten signature in black ink, consisting of a series of loops and a trailing horizontal line.

MICHAEL WILSON
PRIMARY EXAMINER

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|-------------------------|--------------------------------------|--|--|
| Notice to Comply | Application No. 08/485,943 | Applicant(s) Friedman et al. | |
| | Examiner Michael C. Wilson | Art Unit 1632 | |

**NOTICE TO COMPLY WITH REQUIREMENTS FOR PATENT APPLICATIONS
CONTAINING NUCLEOTIDE SEQUENCE AND/OR AMINO ACID SEQUENCE
DISCLOSURES**

Applicant must file the items indicated below within the time period set in the Office action to which the Notice is attached to avoid abandonment under 35 U.S.C. § 133 (extensions of time may be obtained under the provisions of 37 CFR 1.136(a)).

The nucleotide and/or amino acid sequence disclosure contained in this application does not comply with the requirements for such a disclosure as set forth in 37 C.F.R. 1.821 - 1.825 for the following reason(s):

- ☒ 1. This application clearly fails to comply with the requirements of 37 C.F.R. 1.821-1.825. Applicant's attention is directed to the final rulemaking notice published at 55 FR 18230 (May 1, 1990), and 1114 OG 29 (May 15, 1990). If the effective filing date is on or after July 1, 1998, see the final rulemaking notice published at 63 FR 29620 (June 1, 1998) and 1211 OG 82 (June 23, 1998).
- ☐ 2. This application does not contain, as a separate part of the disclosure on paper copy, a "Sequence Listing" as required by 37 C.F.R. 1.821(c).
- ☐ 3. A copy of the "Sequence Listing" in computer readable form has not been submitted as required by 37 C.F.R. 1.821(e).
- ☐ 4. A copy of the "Sequence Listing" in computer readable form has been submitted. However, the content of the computer readable form does not comply with the requirements of 37 C.F.R. 1.822 and/or 1.823, as indicated on the attached copy of the marked -up "Raw Sequence Listing."
- ☐ 5. The computer readable form that has been filed with this application has been found to be damaged and/or unreadable as indicated on the attached CRF Diskette Problem Report. A Substitute computer readable form must be submitted as required by 37 C.F.R. 1.825(d).
- ☐ 6. The paper copy of the "Sequence Listing" is not the same as the computer readable form of the "Sequence Listing" as required by 37 C.F.R. 1.821(e).
- ☒ 7. Other: The sequences on pg 158, line 5 (two) do not have SEQ ID NO. The amino acid sequence in claims 167 and 168 (gly-ser-pro) does not have a SEQ ID NO.

Applicant Must Provide:

- ☒ A substitute computer readable form (CRF) copy of the "Sequence Listing".
- ☒ A substitute paper copy of the "Sequence Listing", **as well as an amendment specifically directing its entry into the specification.**
- ☒ A statement that the content of the paper and computer readable copies are the same and, where applicable, include no new matter, as required by 37 C.F.R. 1.821(e) or 1.821(f) or 1.821(g) or 1.825(b) or 1.825(d).

For questions regarding compliance to these requirements, please contact:

For Rules Interpretation, call (571) 272-2510

For CRF Submission Help, call (571) 272-2501/2583.

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